

1 Department of Public Service

2

3 Adopted Permanent Rules Relating to Thermal Insulation Standards

4

5 Rules as Adopted

6 4155.0100 AUTHORITY AND PURPOSE.

7 The commissioner is authorized by Minnesota Statutes,  
8 sections 325F.20, subdivision 1, and 325F.21, subdivisions 1 and  
9 2, to establish standards for the product quality, safety,  
10 installation, and labeling of thermal insulation products, and  
11 to establish test programs and procedures to ensure that  
12 standards established by this chapter are met.

13 4155.0110 APPLICABILITY.

14 Subpart 1. **Types of residential insulation products**  
15 **covered.** This chapter applies to insulation products for use in  
16 residential buildings. These include insulation for walls,  
17 ceilings, floors, foundation walls, pipe insulation, duct  
18 insulation, and retrofit water heater blanket insulation.

19 Not included are insulation used in manufactured  
20 appliances, windows, and doors, and insulation used in new  
21 manufactured homes assembled outside Minnesota.

22 Subp. 2. [Unchanged.]

23 Subp. 3. **Affected parties.** This chapter applies to  
24 industry members, as defined in part 4155.0120.

25 Subp. 4. **Prohibitions.** The prohibitions in this subpart  
26 apply to the installation and application of insulation.

27 A. Industry members may not install insulation in  
28 residential structures unless it conforms to the product quality  
29 standards in this chapter.

30 B. Industry members and other persons may not engage  
31 in the mobile manufacture of cellulose insulation, which means,  
32 the simultaneous on-site production and installation of  
33 cellulose insulation as an integral mechanical and manufacturing  
34 process.

35 C. Urea-formaldehyde foam or precured forms may not

1 be used in attics or ceilings.

2 D. Polystyrene loose-fill may not be used in attics  
3 unless it complies with the state building code.

4 Subp. 5. Installation, generally. Industry members  
5 installing insulation shall follow manufacturers' written  
6 application instructions.

7 When installing insulation in attic areas, the installer  
8 shall locate flush and recessed light fixtures, and other heat  
9 producing appurtenances, and shall comply with the safety  
10 procedures in items A and B.

11 ~~A.---In accordance with section 410-66 of the National~~  
12 ~~Electrical Code (1984), insulation must not be installed closer~~  
13 ~~than three inches to the sides of recessed light fixtures.~~  
14 ~~Rigid nonflammable blocking must be installed to maintain a~~  
15 ~~three inch minimum clearance from the sides of the fixture.~~  
16 ~~This requirement must be waived if the fixture is approved for~~  
17 ~~coverage with thermal insulation in accordance with section~~  
18 ~~410-66 of the National Electrical Code (1984).~~

19 ~~B.---A three inch minimum air space must be maintained~~  
20 ~~around other heat producing appurtenances, such as motors, fans,~~  
21 ~~and heaters, unless the fixture is specifically approved for~~  
22 ~~coverage with thermal insulation materials.---If the fixture is~~  
23 ~~designated by the manufacturer to require a larger air space~~  
24 ~~than three inches, the larger air space must be maintained.~~  
25 ~~Rigid nonflammable blocking must be installed to maintain the~~  
26 ~~designated clearances National Electrical Code (1987), section~~  
27 ~~410-66, subsections A. and B.~~

28 4155.0120 DEFINITIONS.

29 Subpart 1. and 2. [Unchanged.]

30 Subp. 3. Approved laboratory. "Approved laboratory" means  
31 any testing facility, including a facility owned or operated by  
32 a manufacturer, that has been accredited by one or more of the  
33 following agencies to perform the required test:

34 A. United States Department of Commerce, National  
35 Voluntary Laboratory Accreditation Program (NVLAP),

1 Gaithersburg, Maryland; or

2 B. American Association for Laboratory Accreditation,  
3 Gaithersburg, Maryland.

4 Exception: In the event that an approved laboratory  
5 program is temporarily delayed or is not capable of ~~accrediting~~  
6 being accredited to perform a test or tests, a testing  
7 laboratory possessing the appropriate equipment, facilities, and  
8 qualified personnel to perform the required testing is an  
9 approved laboratory.

10 Subp. 4. to 7. [Unchanged.]

11 Subp. 8. [See Repealer.]

12 Subp. 9. Department. "Department" means the Minnesota  
13 Department of Public Service.

14 Subp. 10. to 13. [Unchanged.]

15 Subp. 14. Insulation. "Insulation" means thermal  
16 insulation which is a material or assembly of materials designed  
17 to provide resistance to heat flow in residential building  
18 structures, including but not limited to mineral fibrous,  
19 mineral cellular, organic fibrous, organic and plastic cellular  
20 and reflective materials, whether in loose-fill, flexible,  
21 rigid, or semirigid form. Any material advertised for use in  
22 residential buildings as having energy saving value by virtue of  
23 its thermal resistance (R-value) or emmissivity properties  
24 ~~{R-value}~~, except windows and doors, shall be considered as  
25 insulation for purposes of this chapter.

26 Subp. 15. to 19. [Unchanged.]

27 Subp. 20. [See Repealer.]

28 Subp. 21. [Unchanged.]

29 Subp. 22. R or R-value. "R" or "R-value" means the  
30 measure of resistance to heat flow through a material or  
31 assembly of materials. It may be stated as the reciprocal of  
32 the heat flow through a material expressed in British thermal  
33 units per hour, per square foot, per degree Fahrenheit. R-value  
34 indicates "thermal performance."

35 Subp. 23. to 28. [Unchanged.]

1 4155.0130 INSULATION MATERIALS STANDARDS.

2 Subpart 1. Scope. This part sets forth standards for the  
3 product quality and safety of thermal insulation materials  
4 specified herein, as well as minimum procedures for the testing  
5 of insulation materials under these standards. Regulated  
6 thermal insulation materials that do not demonstrate by tests  
7 conformance to these standards shall not be sold, used,  
8 distributed, or installed in Minnesota by an industry member.  
9 Performance tests for insulation materials must meet or exceed  
10 the requirements of this part.

11 Subp. 2. General testing requirements. General testing  
12 requirements for regulated thermal insulation materials in this  
13 part are as follows:

14 A. When ASTM amends, reorganizes, or modifies a  
15 standard test method and the manufacturer or testing laboratory  
16 desires to use the new version, the department may be petitioned  
17 to adopt the new test method version. Until the department  
18 adopts or decides not to adopt the new version, the petitioner  
19 may request a temporary variance to use the new test method  
20 version. Criteria or factors in granting a variance are:

21 (1) whether the new test method version amounts  
22 to a substantial change over the old version;

23 (2) whether the amendment to the test version was  
24 controversial within the ASTM decision making body;

25 (3) whether the department sees the new test  
26 version as an improvement in testing quality control;

27 (4) whether the new version adversely affects  
28 consumers or manufacturers; and

29 (5) whether there is strong opposition outside of  
30 the ASTM organization to the new test version.

31 B. All regulated thermal insulation materials must be  
32 tested for compliance with the standards in this part by April  
33 2, 1986. Testing procedures are as follows:

34 (1) Until April 2, 1986, testing must be  
35 performed only at a testing laboratory possessing the  
36 appropriate equipment, facilities, and qualified personnel

1 necessary to perform testing required by parts 4155.0130 to  
2 4155.0150. Tests performed in the 1985 calendar year are  
3 acceptable.

4 (2) After 120 days following adoption of this  
5 chapter, all required testing must be performed by an approved  
6 laboratory ~~to perform the required tests~~.

7 (3) The thermal insulation material chosen for  
8 testing must be representative of material produced by the  
9 manufacturer during normal production runs.

10 (4) Manufacturers without approved laboratory  
11 testing facilities shall contract with an approved laboratory to  
12 conduct an annual surprise on-site inspection of the  
13 manufacturer's production facilities for the following two  
14 purposes:

15 (a) to take random samples of insulation  
16 from the manufacturer's assembly or process system for testing  
17 under this chapter; and

18 (b) to evaluate testing techniques and make  
19 recommendations for improvement if the insulation fails to meet  
20 the assigned testing standards.

21 (5) Testing for each type of insulation must be  
22 performed in accordance with the methods specified in subparts 3  
23 to 8.

24 (6) Insulation must have ~~maximum~~ flammability  
25 characteristics in accordance with the Uniform Building Code,  
26 1985 Edition, sections 1712 and 1713, for its intended uses.

27 C. All thermal performance tests must be conducted in  
28 accordance with this item, unless additional requirements are  
29 imposed within the body of a materials standard. Insulation's  
30 thermal performance must be stated in R-value.

31 (1) The following ASTM test methods must be  
32 used: ASTM C 177-85, ASTM C 236-87, ASTM C 518-85, or ASTM C  
33 976-82. Manufacturers shall select the appropriate test method  
34 for the material unless a specific method or procedure is  
35 referenced within a materials specification.

36 (2) R-value testing must be performed at the

1 insulation's representative thickness, and be consistent with  
2 the requirements of the United States Federal Trade Commission.

3 (3) Unit R per inch must be derived from R-value  
4 testing performed to its representative thickness, as specified  
5 in subitem (2).

6 (4) Except as otherwise provided within a  
7 materials standard, the thermal performance R-value test results  
8 must be the average of the values obtained from at least three  
9 tests.

10 (5) Thermal performance R-value as measured by  
11 test must not be more than ten percent below the stated or  
12 claimed thermal performance of the insulation material.

13 (6) If insulation with foil facings on claim a  
14 "system R-value," the insulation material must comply with  
15 Federal Trade Commission requirements in section-460.5-of  
16 Federal-Register,-Volume-44,-page-50242-(August-27,  
17 1979) sections 460.12(b)(6) and 460.5(D), Code of Federal  
18 Regulations, title 16, part 460.

19 Subp. 3. Cellulose insulation.

20 A. Cellulose fiber in loose-fill form must meet the  
21 following requirements:

22 (1) The product must comply with ASTM C 739-84,  
23 Standard Specification for Cellulosic Fiber (wood-base)  
24 Loose-Fill Thermal Insulation or the United States Consumer  
25 Product Safety Commission Interim Safety Standard for Cellulose  
26 Insulation, ~~Federal-Register,-volume-44,-pages-39966-39982-(July~~  
27 ~~6,-1979)~~ Code of Federal Regulations, title 16, part 1209.

28 (2) All manufacturers shall contract with an  
29 approved laboratory for a follow-up agreement for the following  
30 two purposes:

31 (a) The laboratory shall pick up three  
32 randomly selected unopened bags of manufacturer's cellulose for  
33 testing under this chapter.

34 (b) The laboratory shall conduct a minimum  
35 of one in-plant inspection every two months. The inspection  
36 must be unannounced, and the inspector shall conduct tests in

1 the plant laboratory, on a sample for settled density,  
2 smoldering combustion, critical radiant flux, corrosiveness  
3 (ph), and starch.

4 (3) The department shall be immediately notified  
5 by the manufacturer of any failure to meet test standards.

6 B. Cellulose fiber spray-applied must meet the  
7 following requirements:

8 (1) The basic material must consist of virgin or  
9 recycled wood-based cellulosic fiber. It may be made from  
10 related paper or paperboard stock, stock that does not contain  
11 contaminated materials and extraneous foreign materials, such as  
12 metals and glass, that could be retained in the finished  
13 product. Suitable chemicals may be introduced to improve flame  
14 resistance, processing, adhesive and cohesive qualities, and  
15 handling characteristics. The added chemicals must not create a  
16 health hazard.

17 The basic material must be processed into a form suitable  
18 for installation by pneumatic conveying equipment and  
19 simultaneous mixing with water or adhesive at the spray nozzle.

20 (2) All testing must be performed on spray  
21 applied **spray** cellulose.

22 (3) Determination of thermal performance must be  
23 in accordance with ASTM C 177-85, ASTM C 236-87, ASTM C 518-85  
24 or ASTM C 976-82 at the manufacturer's option, at the  
25 test-defined density of the material. R-value testing must be  
26 performed at a thickness of material of two inches, unless the  
27 material is designed for use at a lesser maximum thickness and  
28 the material is so designated on the label or label notice by  
29 the manufacturer. It must then be tested at the maximum  
30 thickness of suggested use.

31 (4) Density must be determined in accordance with  
32 section 7 of ASTM E 605-77 reapproved 1982. The density  
33 established by this test must be used in the preparation of  
34 manufacturer's installation guidelines and in the determination  
35 of thermal performance.

36 (5) Critical radiant flux and smoldering

1 combustion must be tested for in accordance with the CPSC  
2 Interim Safety Standard for Cellulose Insulation, ~~Federal~~  
3 ~~Register-volume-447-pages-39966-39982-(July-67-1979)~~ Code of  
4 Federal Regulations, title 16, part 1209 [or the ASTM equivalent  
5 in C 739-86]. Values achieved must not exceed those established  
6 by the CPSC.

7 (6) Moisture absorption must be determined in  
8 accordance with section 15 of ASTM C 553-70 reapproved 1977.  
9 Moisture absorption must not exceed 15 percent by weight.

10 (7) The product must comply with test standards  
11 for air erosion, bond strength, and bond deflection that have  
12 been accepted by the ASTM or a federal or state government  
13 agency.

14 (8) Test procedures in subitem (7) are not  
15 required of products that are installed so that physical  
16 restrictions imposed by the construction elements preclude any  
17 possibility of subsequent delamination, erosion, or dusting, and  
18 the product is identified only for those installations.

19 **Subp. 4. Mineral fiber insulation.**

20 A. Mineral fiber in loose-fill form must comply with  
21 ASTM C 764-84, Standard Specification for Mineral Fiber  
22 Loose-Fill Thermal Insulation.

23 B. Mineral fiber in batts and blankets form must  
24 comply with ASTM C 665-86, Standard Specification for  
25 Mineral-Fiber Blanket Thermal Insulation for Light Frame  
26 Construction and Manufactured Housing.

27 C. Mineral fiber in board form must meet the  
28 following requirements:

29 (1) The basic material shall be made from mineral  
30 substances such as rock, slag, or glass processed from a molten  
31 state into a fibrous form. Insulation shall be composed of  
32 mineral fibers with water resistant binder added and formed into  
33 flat rectangular units. Insulation boards shall be uniform in  
34 quality and free from defects, such as broken edges, splits, or  
35 loose materials which would impair its intended use.

36 (2) Thermal performance and surface burning



1 characteristics shall be determined in accordance with subpart ±  
2 2.

3 D. Spray-applied mineral fiber must comply with ASTM  
4 C 1014-84, Standard Specification for Spray-Applied Mineral  
5 Fiber Thermal or Acoustical Insulation.

6 Subp. 9. [See Repealer.]

7 Subp. 5. Foam plastic insulation.

8 A. Molded expanded polystyrene insulation must comply  
9 with ASTM C 578-85 578-87A, Standard Specification for  
10 Preformed, Cellular Polystyrene Thermal Insulation and the  
11 accompanying Supplementary Requirements.

12 B. Extruded Polystyrene must comply with ASTM C  
13 578-85 578-87A, Standard Specification for Preformed, Cellular  
14 Polystyrene Thermal Insulation and the accompanying  
15 Supplementary Requirements.

16 C. Unfaced polyurethane and polyisocyanurate in board  
17 form must comply with ASTM C 591-83, Standard Specification for  
18 Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.

19 D. Faced polyurethane and polyisocyanurate in board  
20 form must comply with Federal Specification HH-I-1972, dated  
21 August 21, 1981, Insulation Board Thermal Faced Polyurethane or  
22 Polyisocyanurate.

23 Subp. 12. [See Repealer.]

24 E. Field-applied urea-formaldehyde foam must meet the  
25 following requirements:

26 (1) The product must comply with ASTM C 951-85,  
27 Standard Specification for Urea-Formaldehyde-Based,  
28 Foam-in-Place Insulation.

29 (2) Resin and foaming agent containers must be  
30 marked with conditions of proper storage and the derated R-value  
31 and shrinkage of the prepared foam as certified by the  
32 manufacturer.

33 (3) Manufacturers and installers of urea  
34 formaldehyde foam insulation shall comply with statutes and  
35 rules, including parts 4620.1600 to 4620.2100, and Minnesota  
36 Statutes, section 325F.18.

1 F. Spray-applied urethane must comply with ASTM C  
2 1029-85, Standard Specification for Spray-Applied Rigid  
3 Polyurethane Thermal Insulation.

4 Subp. 14. [See Repealer.]

5 Subp. 15. [See Repealer.]

6 Subp. 6. Perlite and vermiculite insulation.

7 A. Perlite loose-fill insulation must meet the  
8 following requirements:

9 (1) The product must comply with ASTM C 549-81  
10 (reapproved 1986), Standard Specification for Perlite Loose-Fill  
11 Insulation.

12 (2) The manufacturer shall disclose to the  
13 department any chemical treatment of the perlite material and  
14 the purpose of the treatment.

15 B. Vermiculite in loose-fill form must meet the  
16 following requirements:

17 (1) The product must comply with ASTM C 516-80  
18 (reapproved 1985), Standard Specification for Vermiculite  
19 Loose-Fill Thermal Insulation.

20 (2) The manufacturer shall disclose to the  
21 department any chemical treatment of the vermiculite material  
22 and the purpose of the treatment.

23 Subp. 7. Reflective foil insulation. The following  
24 requirements apply to reflective foil:

25 A. Specimens for tests must consist of pieces of  
26 insulation cut to approximately three by six inches, suspended  
27 in a vertical position and heated to a temperature of 180  
28 degrees Fahrenheit (plus or minus five degrees Fahrenheit) for  
29 at least five hours. At the end of the heating period, the  
30 tester shall examine the reflective surfaces to determine  
31 whether the adhesive has bled through the surface or whether  
32 delamination has occurred.

33 Adhesive used in bonding must be waterproof and show no  
34 sign of bleeding when tested in accordance with the test  
35 procedure identified in item-B section V, part A, of the ICBO  
36 Evaluation Service Acceptance Criteria for Reflective Foil

1 Insulation, June 1987, section V, part A, for adhesive bleeding  
2 requirements. Bleeding at cut edges may be disregarded.

3 B. Reflective foil insulation must be tested  
4 according to ASTM C 976-82 or ASTM C 236-87 to determine the  
5 thermal performance in horizontal, upward, and downward  
6 directions. The tested thermal performance in the heat-flow  
7 direction or directions of the intended application must be  
8 labeled on the material. The manufacturer shall test once in  
9 each direction of intended application; except that, for  
10 products labeled with only one heat-flow direction, the  
11 manufacturer shall test two samples in that direction.

12 Thermal performance for single or multiple sheet sections  
13 must be determined according to ASTM C 976-82 or ASTM C 236-87.  
14 The test panel must consist of a panel using a wooden frame of  
15 two-by-six inch boards 16 inches apart and at least 24 inches  
16 long, covered with a minimum of 1/2-inch gypsum wallboard or  
17 1/2-inch plywood on each side. For tests in the vertical  
18 position, the test panel must be at least seven feet high at a  
19 mean temperature of 75 degrees Fahrenheit, with a temperature  
20 differential of 30 degrees Fahrenheit. The resultant thermal  
21 performance must be based upon the insulation only and the  
22 associated air spaces.

23 ~~Thermal-performance-for-single-sheet-radiant-barrier~~  
24 ~~reflective-insulation-products-shall-meet-as-an-alternative-to~~  
25 ~~this-requirement,-a-reasonable-substantiation-and-basis-of-the~~  
26 ~~energy-savings-claim-~~

27 C. Layers of insulation composed of unsupported foil  
28 that is exposed must have a minimum thickness of 0.0004 inch.  
29 Unsupported foil that is sandwiched in multilayer sheet must  
30 have a minimum thickness of 0.00035 inch. Foil bonded to kraft  
31 paper must have a minimum thickness of 0.00025 inch. ~~Minimum~~  
32 ~~space-between-layers-of-a-multilayer-sheet-must-conform-with~~  
33 ~~Federal-Specification-HH-I-1252B-dated-August-18-1976-~~

34 D. Foil must be folded in accordance with TAPPI  
35 Standard No. 512-OM86, and the folded edge smoothed using a  
36 light finger pressure. The finished insulation must not crack

1 when folded to 180 degree bend at a temperature of 70 degrees  
2 Fahrenheit (plus or minus two degrees Fahrenheit) and a relative  
3 humidity of 50 percent (plus or minus five percent).

4 E. Reflective foil insulation that conforms to all  
5 requirements of ICBO Evaluation Service Acceptance Criteria for  
6 Reflective Foil Insulation, June 1987 (with the exception that  
7 thermal performance shall be tested with a temperature  
8 differential of 30 degrees Fahrenheit between the inside  
9 surfaces of the test panel), meets the Minnesota testing  
10 standards in this subpart.

11 Subp. 8. **Other insulation.** Insulation other than  
12 insulation specified in subparts 1 to 7, to be sold, marketed,  
13 or advertised for use in residential structures in Minnesota  
14 must comply with the following requirements:

15 A. thermal performance and surface burning  
16 characteristics must be determined in accordance with subpart 1  
17 2;

18 B. results of the water absorption test must be  
19 reported;

20 C. if the material is foam-in-place, a test of the  
21 shrinkage using ASTM C 591-85, section 8.5 must be used;

22 D. if the material contains formaldehyde, a  
23 ~~urea-formaldehyde~~ formaldehyde content test is necessary; and

24 E. the initial report as required by part 4155.0145,  
25 subpart 2, must include a description of other tests applied to  
26 the product.

27 Before insulation is sold, marketed, or advertised for use  
28 in residential structures in Minnesota, the manufacturer shall  
29 test the insulation with an approved laboratory and submit a  
30 certification of compliance with a federal, state, or ASTM  
31 standard specification that addresses all of the performance  
32 characteristics of the product. When no federal, state, or ASTM  
33 standard specification has been developed, the manufacturer  
34 shall present test data from an approved laboratory that shows  
35 the insulation and its intended uses are safe and effective and  
36 does not pose a threat to human health.

1 4155.0135 REQUIREMENTS FOR INSULATION FOR SPECIAL APPLICATIONS.

2 Subpart 1. Application testing requirements for exterior,  
3 underground insulation.

4 A. Insulation by itself or as part of a system must  
5 be in-service tested in a testing facility designed to duplicate  
6 actual underground conditions. The testing environment must  
7 reflect the extremes of weather, moisture, and soil conditions.  
8 The purpose of the testing must be to determine aged R-value  
9 performance, giving consideration to the conditions listed in  
10 item C. A summary of the test results must be submitted to the  
11 department.

12 B. As an alternative to item A, the testing initiator  
13 may elect to have an insulation tested by an approved laboratory  
14 and listed for underground use, with consideration given to the  
15 conditions listed in item C.

16 C. The listing of the product for underground use  
17 must be based on the most recent applicable ASTM tests or any  
18 other tests that are available that give consideration to each  
19 of the following conditions:

- 20 (1) moisture absorption;  
21 (2) mechanical durability under freeze-thaw  
22 cycling conditions;  
23 (3) soil compatibility;  
24 (4) flexural strength or compression; and  
25 (5) vapor drives due to high-low pressure  
26 gradients.

27 D. The initiator seeking the listing shall select the  
28 appropriate tests that best address the conditions stated in  
29 item C.

30 E. An association or trade representative may  
31 initiate a product's listing on behalf of its constituency. The  
32 association shall submit representative samples for testing and  
33 certify to the department which manufacturers within its  
34 constituency the samples are representative of. The association  
35 must have an internal certification procedure to determine

1 constituency conformity to the representative samples submitted  
2 for testing.

3 F. A summary of test results for item B must be  
4 submitted to the department.

5 Subp. 2. Installation instructions for underground use.

6 Written instructions on underground use of insulation must, at a  
7 minimum, contain instructions or information regarding:

8 A. optimal application techniques;

9 B. drainage, as specified in section R-305 of the One  
10 & Two Family Dwelling Code by CABO (1983 Edition);

11 C. waterproofing and dampproofing, as specified in  
12 section R-306 of the One & Two Family Dwelling Code by CABO  
13 (1983 Edition);

14 D. varying soil and soil moisture conditions;

15 E. temperature effects on application;

16 F. optimal backfill techniques for protection from  
17 physical damage; and

18 G. the manufacturers' warranty, if any. The  
19 manufacturer shall state whether it warrants the insulation for  
20 underground use and, if applicable, the conditions of warranty  
21 and the length of warranty, including a statement of the number  
22 of years for which the product is warranted to maintain 80  
23 percent of its advertised R-value.

24 Manufacturers that recommend a product for underground use  
25 in the vertical or horizontal position shall provide complete  
26 instructions for its respective applications.

27 Subp. 3. Practice of insulation use for exterior  
28 underground installation. The following requirements apply to  
29 the exterior installation or application of insulation below the  
30 ground:

31 A. The installation or application of insulation in  
32 the vertical and horizontal position must conform to the  
33 manufacturers' instructions and recommendations.

34 B. Insulation extending above the ground line must be  
35 covered with an exterior wall finish to protect the insulation  
36 from ultraviolet sunlight, moisture absorption, freeze-thaw

1 durability, air erosion, and general weather conditions.

2 C. Polyurethane or polyisocyanurate spray-applied  
3 application must meet the following conditions:

4 (1) Manufacturers shall recommend the type of  
5 urethane systems to be used for underground use and applicators  
6 shall only use a recommended system.

7 (2) Polyurethane or polyisocyanurate  
8 spray-applied application must have a protective coating applied  
9 to its exterior surface above and below ground. The type of  
10 protective coating and method of application must be in  
11 accordance with the insulation manufacturer's instructions and  
12 recommendations.

13 D. Mineral fiber foundation insulation and drainage  
14 boards must meet the following conditions:

15 (1) The board must be manufactured to facilitate  
16 proper downward drainage, or in the alternative, manufactured in  
17 such a manner that moisture will not substantially penetrate  
18 horizontally toward the foundation wall.

19 (2) The board must not be used without exterior  
20 drainage, as defined in part 4155.0120.

21 Subp. 4. Pipe insulation, duct wrap insulation, and water  
22 heater blanket insulation. Pipe insulation, duct wrap  
23 insulation, and water heater blanket insulation must meet the  
24 standards of part 4155.0130, including the flammability  
25 requirements for insulation in part 4155.0130, subpart 2, item  
26 B, clause {5} (6). Water heater blanket ~~standards~~ products must  
27 meet the flammability requirements of pipe-insulation  
28 flame-spread 50 and smoke-developed 100, when tested in  
29 accordance with ASTM standard E84-84, Revision A, Surface  
30 Burning Characteristics of Building Materials.

31 4155.0145 REPORTING REQUIREMENTS.

32 Subpart 1. **Applicability.** This subpart identifies all  
33 industry members to whom subparts 2 and 3 apply.

34 A. Manufacturers of insulation materials, components,  
35 or products shall file an initial report as required by subpart

1 2.

2 B. A reseller, repackager, or industry member who  
3 alters the physical properties of an insulation product  
4 manufactured by another industry member shall file an initial  
5 report as required by subpart 2.

6 C. An industry member that intends to sell an  
7 insulation product manufactured by another industry member under  
8 its own trade or brand name, desires to be listed as the  
9 manufacturer, and does not alter physical properties of the  
10 insulation product, shall file an initial report. The filing  
11 insulation member can comply with subpart 2, item B, by  
12 certifying that the product is the same as when it was  
13 previously filed.

14 Subp. 2. Initial report. An industry member shall file an  
15 initial report at least 30 days before offering for sale in the  
16 state any new products, significant changes to a product already  
17 filed, or changes to product installation instructions to a  
18 product already filed.

19 The initial report must include the following:

20 A. the manufacturer's name, address, phone number,  
21 and contact person;

22 B. product names, including any and all generic,  
23 trade, and brand names the product may be identified by;

24 C. type of product;

25 D. product literature, including installation  
26 instructions, a copy of the label affixed to the product, and a  
27 list of the intended uses of the product;

28 E. a fact sheet as required by FTC R-value rule,  
29 identified in Code of Federal Regulations, title 16, part 460;

30 F. results of initial tests, as required by part  
31 4155.0130, identifying tests performed, name of laboratory,  
32 testing dates, and test results;

33 G. a statement that each product meets or exceeds the  
34 test standards required by this chapter;

35 H. if follow-up agreement is required by part  
36 4155.0130, the:



1 (1) scope of material characteristics of the  
2 product encompassed by this agreement; and

3 (2) frequency of unannounced inspections; and

4 I. a description of the quality assurance program.

5 Subp. 3. Annual filing requirement.

6 A. Industry members who have made initial filings  
7 shall file by June 1 of each year.

8 B. For each product, the report must include:

9 (1) the manufacturer's name, address, phone  
10 number, and contact person;

11 (2) product names, including all generic, trade,  
12 and brand names by which the product may be identified;

13 (3) certification that the product has not  
14 undergone significant changes since the initial report was  
15 filed; and

16 (4) identification of and changes in information  
17 that may have changed from the initial or previous annual  
18 report, including product brand names, product literature,  
19 Federal Trade Commission fact sheet, product usage, or  
20 discontinuation of manufacture.

21 C. Additional testing information must be made  
22 available as follows:

23 (1) Upon the request of the commissioner, the  
24 manufacturer, a representative of the manufacturer, or the  
25 testing laboratory shall provide all applicable information  
26 pertaining to the testing program. The information must include  
27 test procedures and protocols, test equipment specifications and  
28 calibrations, the qualifications of test laboratory personnel  
29 exclusive of personal identifiers, full test data, and proof of  
30 an approved laboratory's certification.

31 (2) Upon the written request of intermediate and  
32 ultimate consumers of insulation the manufacturer shall make  
33 available a current certification of conformance to applicable  
34 test standards.

35 4155.0155 APPLICATION AND INSTALLATION STANDARDS.

1 Subpart 1. **Applicability.** Industry members who offer  
2 insulation installation services for residential buildings shall  
3 comply with the application standards in this part.

4 The application standards in this part do not apply to  
5 nonresidential buildings or construction.

6 This part applies to new residential construction and  
7 retrofit applications.

8 Subp. 2. **Application and inspection.** Industry members  
9 installing insulation shall follow manufacturer's written  
10 application instructions.

11 In attic areas where insulation is to be installed, the  
12 installer shall ~~locate all flush and recessed light fixtures,~~  
13 ~~and other heat-producing appurtenances, and shall~~ comply with  
14 ~~the following safety procedures:~~

15 A. ~~In accordance with section 410-66 of the National~~  
16 ~~Electrical Code (1984), insulation must not be installed closer~~  
17 ~~than three inches to the sides of recessed light fixtures.~~  
18 ~~Rigid nonflammable blocking must be installed to maintain a~~  
19 ~~three-inch minimum clearance from the sides of the fixture.~~  
20 ~~This requirement must be waived if the fixture is approved for~~  
21 ~~coverage with thermal insulation in accordance with section~~  
22 ~~410-66 of the National Electrical Code (1984).~~

23 B. ~~A three-inch minimum air space must be maintained~~  
24 ~~around other heat-producing appurtenances, such as motors, fans,~~  
25 ~~and heaters, unless the fixture is specifically approved for~~  
26 ~~coverage with thermal insulation materials. If the fixture is~~  
27 ~~designated by the manufacturer to require a larger air space~~  
28 ~~than three inches, the larger air space must be maintained.~~  
29 ~~Rigid nonflammable blocking must be installed to maintain the~~  
30 ~~designated clearances~~ part 4155.0110, subpart 5.

31 Subp. 3. **Manufacturer's installation or application**  
32 **instructions.** Manufacturers shall provide installation and  
33 application instructions that comply with this subpart:

34 A. The manufacturer's written instructions describing  
35 areas of recommended use, the proper methods of application, and  
36 required or recommended safety measures must be provided to each

1 intermediate consumer and installer of all insulation sold for  
2 use in Minnesota within ten days of the sale.

3 B. Intermediate consumers and installers shall  
4 provide or make available all written instructions to ultimate  
5 consumers.

6 C. Urea-formaldehyde foam insulation installation  
7 must conform with Minnesota Statutes, section 325F.18 and  
8 Minnesota Rules, part 4620.2100.

9 4155.0160 LABELING.

10 Insulation used or offered for sale in Minnesota must be  
11 labeled according to the ~~United States Consumer Product Safety~~  
12 ~~Commission requirements in Federal Register, volume 44, pages~~  
13 ~~39966-39982 (July 6, 1979), or the United States~~ Federal Trade  
14 Commission requirements in ~~Federal Register, volume 44, pages~~  
15 ~~50242-50245 (August 27, 1979)~~ Code of Federal Regulations, title  
16 16, part 460. All cellulose insulation products must also  
17 comply with the United States Consumer Product Safety Commission  
18 requirements in Code of Federal Regulations, title 16, part 1209.

19 4155.0170 INCORPORATIONS BY REFERENCE AND CITATIONS.

20 Subpart 1. Generally. Portions of the following standards  
21 listed in subparts 2 and 3 which are found throughout this  
22 chapter are incorporated by reference; most of the material is  
23 subject to frequent change, and all of the standards listed are  
24 available to the public at the public libraries listed in  
25 subpart 4.

26 The standards and tests selected are all an integral part  
27 of current insulation industry testing procedures. All  
28 manufacturers and testing laboratories presently possess or have  
29 access to each referenced incorporation.

30 Subp. 2. ASTM. The following ASTM standards are  
31 incorporated by reference:

32 A. ASTM C 168-80a, Standard Definitions of Terms  
33 Relating to Thermal Insulation Materials.

34 B. ASTM C 177-85, Steady-State Thermal Transmission  
35 Properties by means of the Guarded Hot Plate.

- 1 C. ASTM C 236-87, Steady-State Thermal Performance of  
2 Building Assemblies by means of a Guarded Hot Box.
- 3 D. ASTM C 516-80 (reapproved 85), Standard  
4 Specification for Vermiculite Loose-Fill Thermal Insulation.
- 5 E. ASTM C 518-85, Steady-State Thermal Transmission  
6 Properties by means of the Heat Flow Meter.
- 7 F. ASTM C 549-81 (reapproved 86), Standard  
8 Specification for Perlite Loose Fill Insulation.
- 9 G. ASTM C 553-70 (reapproved 77), Standard  
10 Specification for Mineral Fiber Blanket and Felt Insulation.
- 11 H. ASTM C 578-85 578-87A, Standard Specification for  
12 Preformed, Cellular Polystyrene Thermal Insulation.
- 13 I. ASTM C 591-85, Standard Specification for Unfaced  
14 Preformed Rigid Cellular Polyurethane Thermal Insulation.
- 15 J. ASTM C 665-86, Standard Specification for Mineral  
16 Fiber Blanket Thermal Insulation for Light Frame Construction  
17 and Manufactured Housing.
- 18 K. ASTM C 739-86, Standard Specification for  
19 Cellulosic Fiber (wood-base) Loose-Fill Thermal Insulation.
- 20 L. ASTM C 764-84, Standard Specification for Mineral  
21 Fiber Loose-Fill Thermal Insulation.
- 22 M. ASTM C 951-85, Standard Specification for  
23 Urea-Formaldehyde-Based, Foam-in-Place Insulation.
- 24 N. ASTM C 976-82, Thermal Performance of Building  
25 Assemblies by means of a Calibrated Hot Box.
- 26 O. ASTM C 1014-84, Standard Specification for  
27 Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.
- 28 P. ASTM E 84-84 Revision A, Surface Burning  
29 Characteristics of Building Materials.
- 30 Q. ASTM E 605-77 reapproved 1982, Thickness and  
31 Density of Sprayed Fire-Resistive Material Applied to Structural  
32 Members.
- 33 R. ASTM C 1029-85, Standard Specification for  
34 Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.
- 35 Subp. 3. Other incorporation and citations. The following  
36 non-ASTM standards are also incorporated by reference:

1           A. ASHRAE Handbook of Fundamentals, (1981 Edition) by  
2 the American Society of Heating, Refrigerating and Air  
3 Conditioning Engineers, Inc. (Technical Reference Book).

4           B. CABO, sections R-305 and R-306 of the One & Two  
5 Family Dwelling Code, by the Council of American Building  
6 Officials (1983 Edition).

7           C. ~~Federal Specification (FS) HH-I-1252B (August 18,~~  
8 ~~1976) by the General Services Administration.~~

9           D. Federal Trade Commission (FTC) requirements in  
10 Code of Federal Regulations, title 16, part 460, ~~(Federal~~  
11 ~~Register, volume 44, page 50242, August 27, 1979).~~

12           E. D. National Electrical Code, section 410-66 (1984  
13 Edition 1987), by the National Fire Protection Association.

14           F. E. Consumer Products Safety Commission (CPSC)  
15 Interim Safety Standard for Cellulose Insulation, Code of  
16 Federal Regulations, title 16, part 1209 ~~(Federal Register,~~  
17 ~~volume 44, pages 39966-39993, July 6, 1979).~~

18           G. F. Uniform Building Code (1985 Edition), by the  
19 International Conference of Building Officials.

20           H. G. Federal Specification (FS) HH-I-1972 by the  
21 General Services Administration.

22           H. ICBO Evaluation Service Acceptance Criteria for  
23 Reflective Foil Insulation (June 1987), of the International  
24 Conference of Building Officials.

25           I. TAPPI Standard No. 512-OM86 by the Technical  
26 Association of the Pulp and Paper Industry.

27           Subp. 4. **Availability.** The standards incorporated by  
28 reference are available for public inspection as follows:

29           A. All documents incorporated by reference in this  
30 chapter are available at the following locations:

31                   (1) Minnesota State Law Library; and

32                   (2) James J. Hill Reference Library.

33           B. All ASTM test standards are available through the  
34 following additional locations:

35                   (1) Minneapolis Public Library;

36                   (2) University of Minnesota Engineering Library;

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1 and

2 (3) American Society for Testing and Materials,  
3 1916 Race Street, Philadelphia, PA 19103.

4

5 REPEALER. Minnesota Rules, parts 4155.0120, subparts 8 and  
6 20; 4155.0130, subparts 9, 12, and 14; 4155.0140; and 4155.0180,  
7 are repealed.